



### REMARKS

Claims 11-14 are pending, with claims 11-12 being withdrawn for being directed to a non-elected invention. By this Amendment, claims 11-14 are amended. No new matter is added.

The Office Action asserts that claims 11-12 (Group I) and claims 13-14 (Group II) are drawn to different inventions. Applicants affirm election of Group II. Applicants have amended claims 11-12 to depend from claims 13-14. Thus, Applicants reserve the right to file a Divisional application with respect to non-amended claims 11-12 and also request that amended claims 11-12 be rejoined and examined with claims 11-12, which are allowable at least for the reasons discussed below.

The Office Action asserts that Figures 1 and 2 should be designated by a legend such as --PRIOR ART--. Applicants have attached hereto amended drawings in which Figures 1 and 2 are amended to indicate that the subject matter thereof is --CONVENTIONAL ART--.

The Office Action objects to the specification (particularly the abstract) for not "better reflecting the instant invention." Applicants have attached on a separate page hereto a replacement abstract, as suggested by the Examiner. Reconsideration and withdrawal of the objection to the specification are thus respectfully requested.

The Office Action rejects claims 13 and 14 under 35 U.S.C. 112, second paragraph, as being indefinite. Applicants believe that this rejection is overcome with the above amendments to claims 13 and 14. Reconsideration and

withdrawal of the rejection of claims 13 and 14 under 35 U.S.C. 112, second paragraph, are respectfully requested.

The Office Action rejects claims 13 and 14 under 35 U.S.C. 102(b) as being anticipated by or alternatively under 35 U.S.C. 103(a) as being obvious over Yokoyama et al. (U.S. Patent No. 5,723,234). The Office Action also rejects claims 13 and 14 under 35 U.S.C. 102(b) as being anticipated by or alternatively under 35 U.S.C. 103(a) as being obvious over EP 0872767. These rejections are traversed.

The present claims are directed to a "chromium-containing half-tone phase-shift photomask" produced by a processing that utilizes a "reducing gas."

In contrast, neither of the Yokoyama et al. phase shift photomask and the EP 0872767 halftone phase shift photomask are made utilizing a mixed gas of  $\text{CH}_2\text{Cl}_2$  and oxygen. However, neither the mixed gas utilized in the Yokoyama et al. phase shift photomask nor the mixed gas utilized in the EP 0872767 halftone phase shift photomask contain a reducing gas, as is required to make the "chromium-containing half-tone phase-shift photomask" of the presently claimed invention.

Thus, neither Yokoyama et al. nor EP 0872767 teach or suggest a photomask prepared using the mixed gas containing (a) a reactive ion etching gas, which contains an oxygen-containing gas and a halogen-containing gas, and (b) a reducing gas added to the gas component (a), with which the presently claimed photomask is prepared. However, the Office Action asserts

that it is "Applicants' burden to prove that an unobvious difference exists" (page 5 of the Office Action).

In this regard, Applicants note that the present specification demonstrates the structural differences, as well as the unexpected advantages achieved, comparing a photomask prepared using the above-discussed mixed gas with a photomask prepared without such a mixed gas. In particular, the present specification explains that as "will be seen from the data shown in Table 2 and Fig. 7, there is observed a dimensional difference of about 0.052 micrometers between the coarse and dense portions when any HCl gas was not added to the etching gas, while the dimensional difference therebetween [is possible to be reduced with an addition of HCl gas, that is]...the dimensional difference between the coarse and dense portions of the patterns was in the range of from about 0.010 to 0.020 micrometers which corresponded to about 1/5.2 to 1/2.6 times that observed when any HCl gas was not added. This clearly indicates that the problem of the dimensional difference between the coarse and dense portions is considerably eliminated" (see page 23, line 4 to 24, line 2, of the present specification). As is clear from Table 2, even better results (dimensional differences between the coarse and dense portions of the patterns in the range of from about 0.002 to 0.011 micrometers) are obtained when utilizing H<sub>2</sub> as a reducing gas than when using HCl.

As further explained in Example 3 of the present specification, the "resulting chromium oxide half-tone phase-shift photomask was found to have a very small dimensional difference between the coarse and dense portions of the

patterns. These results clearly indicate that the use of the foregoing added gas permits the achievement of quite satisfactory results, i.e., substantial reduction of the dimensional difference, like the results observed in Examples 1 and 2" (see the discussion of Example 3 on page 28 of the present specification).

In order to expedite prosecution of this application, Applicants have amended the claims to specifically recite the coarse and dense portions to which the above-discussed unexpected results and advantages pertain.

Because the presently claimed invention is clearly different from and has unexpected advantages over the cited references, it is respectfully submitted that the presently claimed invention is not anticipated by, and would not have been obvious over, such references. Reconsideration and withdrawal of the rejections of claims 13 and 14 are thus respectfully requested.

Applicants respectfully submit that this application is in condition for allowance and such action is earnestly solicited. If the Examiner believes that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below to schedule a personal or telephone interview to discuss any remaining issues.

In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any additional fees may be charged to Counsel's Deposit Account 01-2300, **referencing attorney docket number 101136-00101.**

Respectfully submitted,

A handwritten signature in cursive script, reading "Robert K. Carpenter", written in black ink. The signature is positioned above a horizontal line.

Robert K. Carpenter  
Registration No. 34,794

Customer No. 004372  
ARENT FOX PLLC  
1050 Connecticut Avenue, N.W.,  
Suite 400  
Washington, D.C. 20036-5339  
Tel: (202) 857-6000  
Fax: (202) 638-4810  
RKC/tdd